

March 25 to March 31, 2012 (Week 13)

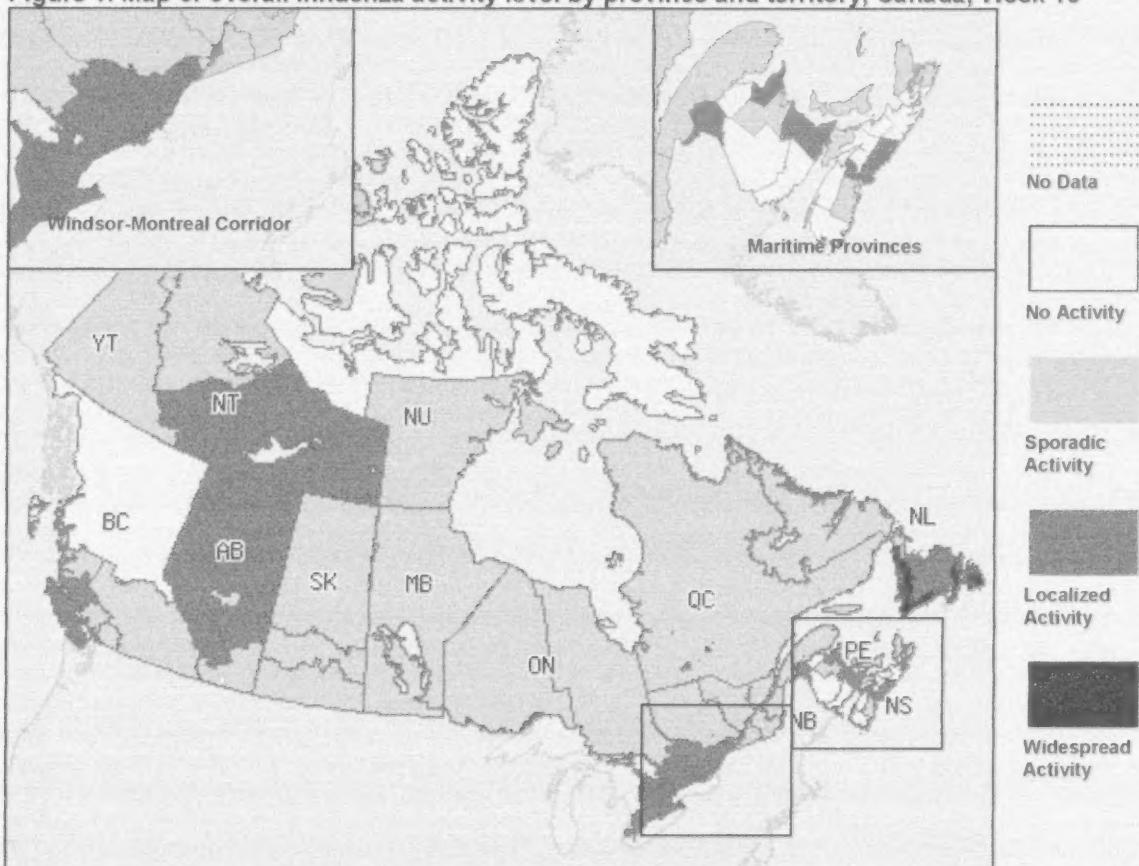
Overall Influenza Summary

- Overall influenza activity in Canada has started to decline; however activity remains elevated in some regions of the country (i.e. Atlantic Region, Ontario & Alberta).
- Fifty-seven outbreaks of influenza or ILI were reported this week (30 in LTCFs, 7 in hospitals, 12 in schools and 8 others).
- In week 13, 998 laboratory detections of influenza were reported (14.4% - A(H3); 8.3% - A(H1N1)pdm09; 20.5% - unsubtyped and 56.7% influenza B). The proportion of positive detections for both influenza A and B viruses declined in week 13 compared to the previous week.
- 9.6% of the H3N2 viruses and 0.7% of the H1N1 viruses antigenically characterized showed reduced titres against the current vaccine strains
- 126 influenza-associated hospitalizations were reported this week (43 paediatric through IMPACT surveillance and 83 adult through aggregate surveillance)
- The ILI consultation rate declined compared to the previous week but remains within expected levels.

Influenza Activity (geographic spread) and Outbreaks

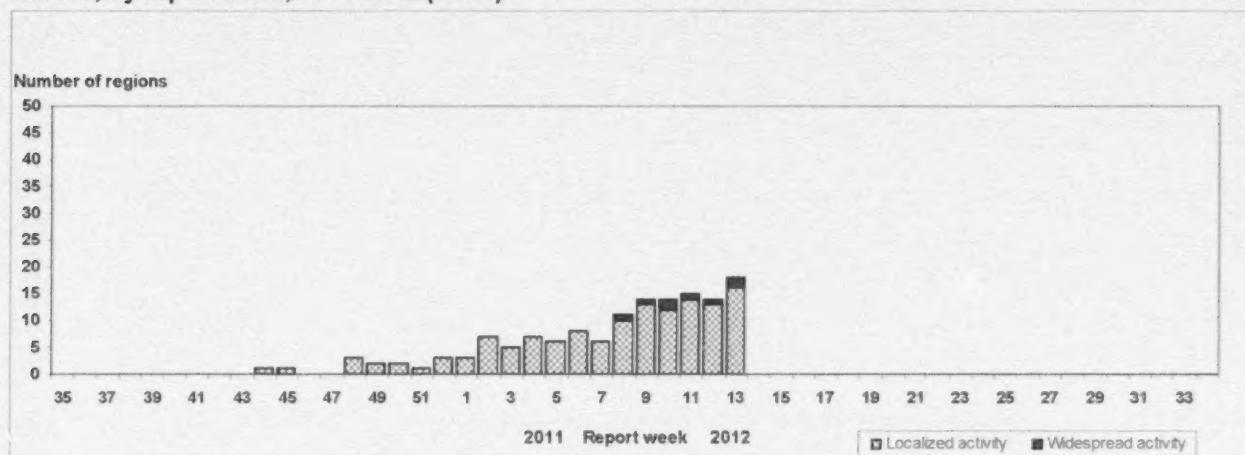
In week 13, 2 regions reported widespread influenza activity (NL), 16 surveillance regions (within BC, AB, ON, QC, NS, NB, NL & NT) reported localized activity and 27 regions (within all provinces and territories) reported sporadic influenza activity (see Figure 1). Fifty-seven outbreaks of influenza or ILI were reported this week: 30 in long-term care facilities (2 in BC, 4 in AB, 20 in ON, 2 in NS, 1 in NL & 1 in NT), 7 in hospitals (2 in ON, 3 in QC, 1 in NS & 1 in NL), 12 in schools (2 in AB, 5 in NB & 5 in NL) and 8 others (5 in ON & 3 in NL) (Figure 3).

Figure 1. Map of overall Influenza activity level by province and territory, Canada, Week 13



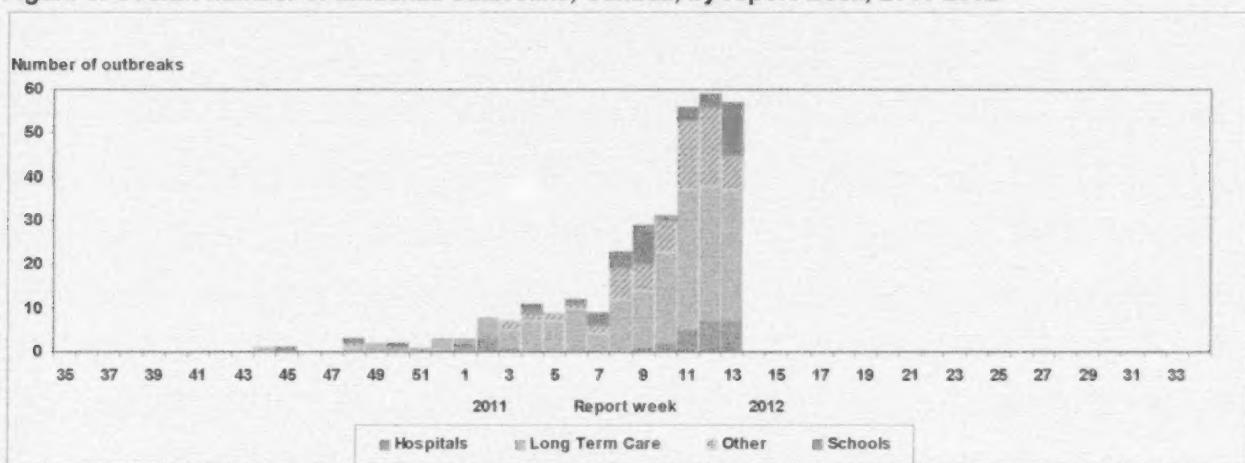
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2011-2012 (N=56)



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2011-2012



Influenza and Other Respiratory Virus Detections

The proportion of positive influenza tests declined this week and was 20.4% (998/4,887) for week 13 (Figure 4 & 5). The proportion of positive detections for both influenza B (11.6%) and influenza A (8.8%) declined in week 13 compared to the previous week. To date this season, influenza B remains the predominant virus type circulating in Manitoba, Ontario and all of the Atlantic Provinces.

Cumulative to date of influenza virus detections by type/subtype is as follows: 51.6% influenza A (40.3% - A(H3); 18.9% - A(H1N1)pdm09; 40.8% - unsubtyped) and 48.4% influenza B (Table 1).

Detailed information on age and type/subtype were received on 6,124 cases to date this season (Table 2). The proportions of cases by age group are as follows: 21.4% were < 5 years; 17.9% were between 5-19 years; 23.2% were between 20-44 years; 15.4% were between 45-64 years of age; 21.9% were \geq 65 years; and 0.2% with age unknown. The largest proportion of influenza A cases were between 20-44 years of age (27%) and those \geq 65 years of age (23%). The largest proportion of influenza B cases were under 20 years of age (50%).

In week 13, the percentage positive for other respiratory viruses declined compared to the previous week (RSV-8.7%; parainfluenza-1.0%; adenovirus-1.2%; human metapneumovirus-4.9%; rhinovirus-5.2%; and coronavirus-2.7%) (Figure 5). For more details, see the weekly [Respiratory Virus Detections in Canada Report](#).

Table 1. Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2011-2012

Reporting provinces	March 25 to March 31, 2012					Cumulative (August 28, 2011 to March 31, 2012)						
	Influenza A					Influenza A					B	
	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total
BC	18	0	13	3	2	5	445	0	380	57	8	71
AB	133	0	93	17	23	16	902	0	704	141	57	88
SK	38	0	17	8	13	15	417	0	285	37	95	26
MB	11	0	0	0	11	45	52	0	8	1	43	134
ON	66	0	13	41	12	234	756	0	184	417	155	1874
QC	134	0	5	7	122	181	1367	0	42	86	1239	1271
NB	13	0	3	7	3	42	52	0	14	21	17	74
NS	1	0	0	0	1	8	3	0	0	0	3	63
PE	0	0	0	0	0	3	3	0	2	1	0	17
NL	18	0	0	0	18	17	46	0	9	4	33	176
Canada	432	0	144	83	205	566	4043	0	1628	765	1650	3794

*Unsubtyped: The specimen was typed as influenza A, but no test for subtyping was performed. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2011-2012*

Age groups	Weekly (Mar. 25 to Mar. 31, 2012)					Cumulative (Aug. 28, 2011 to Mar. 31, 2012)				
	Influenza A				B	Influenza A				B
	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total
<5	23	4	19	0	11	667	142	257	268	644
5-19	18	4	13	1	11	397	59	218	120	698
20-44	32	7	21	4	5	939	187	362	390	479
45-64	32	6	21	5	5	627	118	219	290	319
65+	46	1	43	2	2	809	52	522	235	533
Unknown	0	0	0	0	0	12	6	6	0	0
Total	151	22	117	12	34	3451	564	1584	1303	2673

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2011-2012

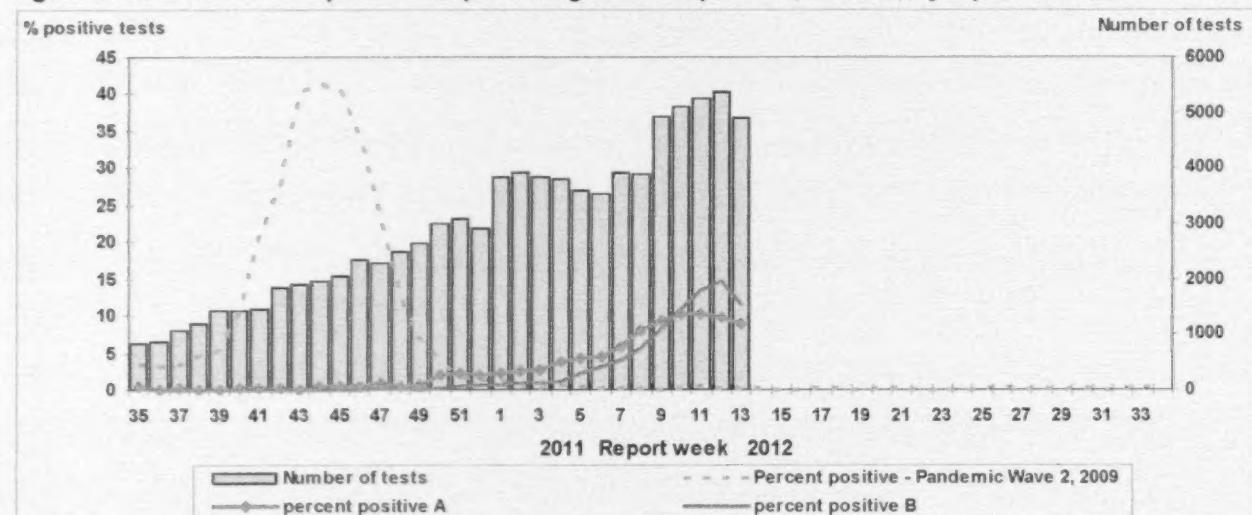
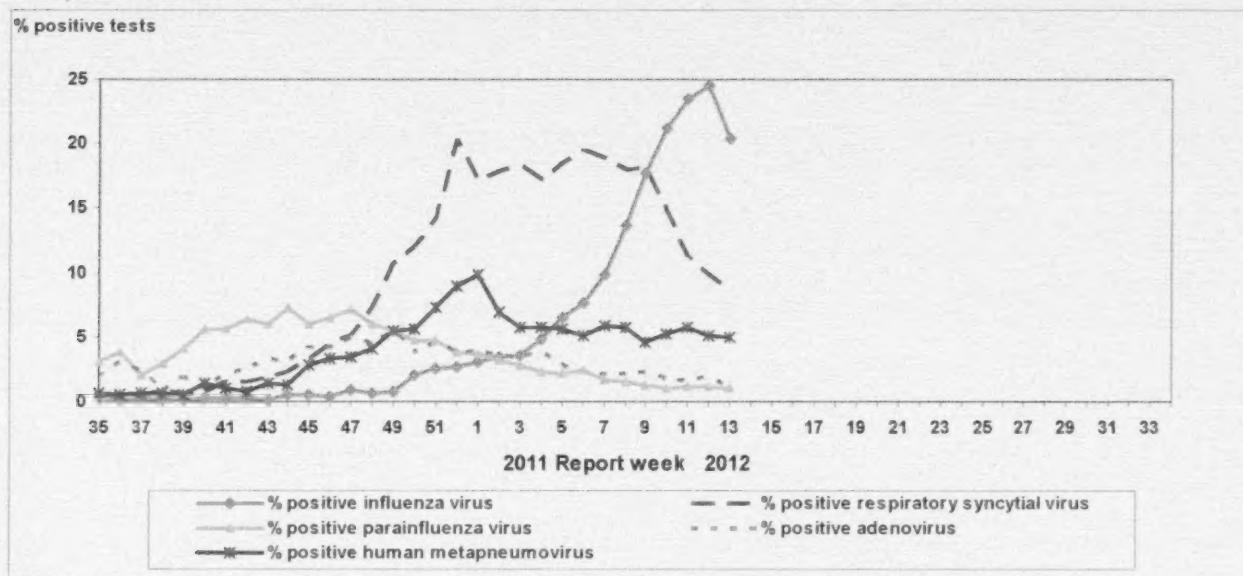


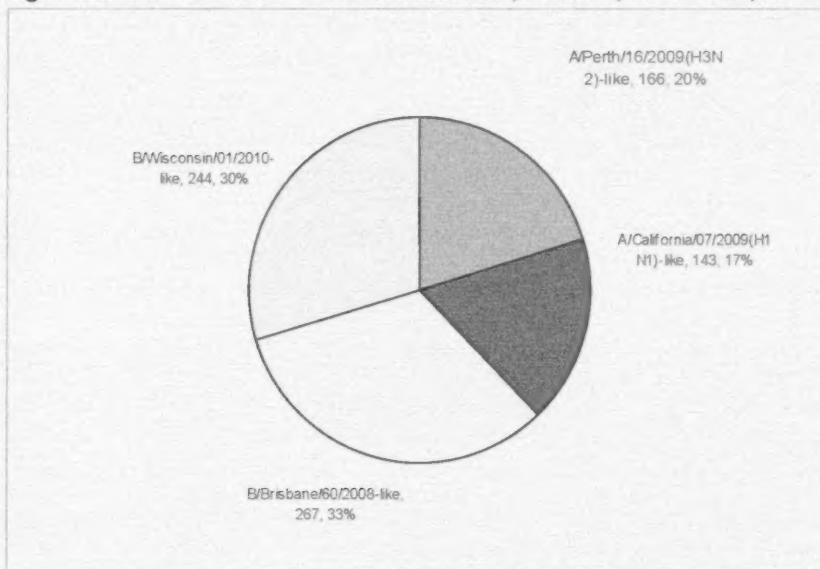
Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2011-2012



Influenza Strain Characterizations

Since the start of the season, the National Microbiology Laboratory (NML) has antigenically characterized 820 influenza viruses (166 A/H3N2, 143 A/H1N1 and 511 B). Of the 166 A/H3N2 viruses (from BC, AB, SK, MB, ON, QC & NT), 150 (90.4%) were antigenically similar to A/Perth/16/2009 while 16 (9.6%) viruses showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 143 A/H1N1 viruses characterized (from BC, AB, SK, ON, QC & NB), 142 (99.3%) were antigenically similar to A/California/07/2009 and 1 (0.7%) virus tested showed reduced titer with antiserum produced against A/California/07/2009. Of the 511 influenza B viruses characterized, 267 (52.3%) (from BC, AB, SK, MB, ON, QC, NB, NS & NL) were antigenically similar to the vaccine strain B/Brisbane/60/2008 (Victoria lineage); however 1 virus out of the 267 tested showed reduced titer with antiserum produced against B/Brisbane/60/2008. The remaining 244 (47.7%) influenza B viruses (from BC, AB, MB, ON, QC, NB, NS & NU) are antigenically related to the reference virus B/Wisconsin/01/2010-like, which belongs to the Yamagata lineage. (Figure 6)

Figure 6. Influenza strain characterizations, Canada, 2011-2012, N = 820



Note: The recommended components for the 2011-2012 Northern Hemisphere influenza vaccine include: A/Perth/16/2009 (H3N2), A/California/7/2009 (H1N1) and B/Brisbane/60/2008.

Antiviral Resistance

Since the beginning of the season, NML has tested 731 influenza viruses for resistance to oseltamivir (by phenotypic assay and/or sequencing) and zanamivir (by phenotypic assay) and it was found that all viruses tested were susceptible to oseltamivir and zanamivir. A total of 447 influenza A viruses (255 H3N2 and 192 H1N1) were tested for amantadine resistance; all but 1 influenza A(H3N2) virus tested were resistant. (Table 3)

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2011-2012

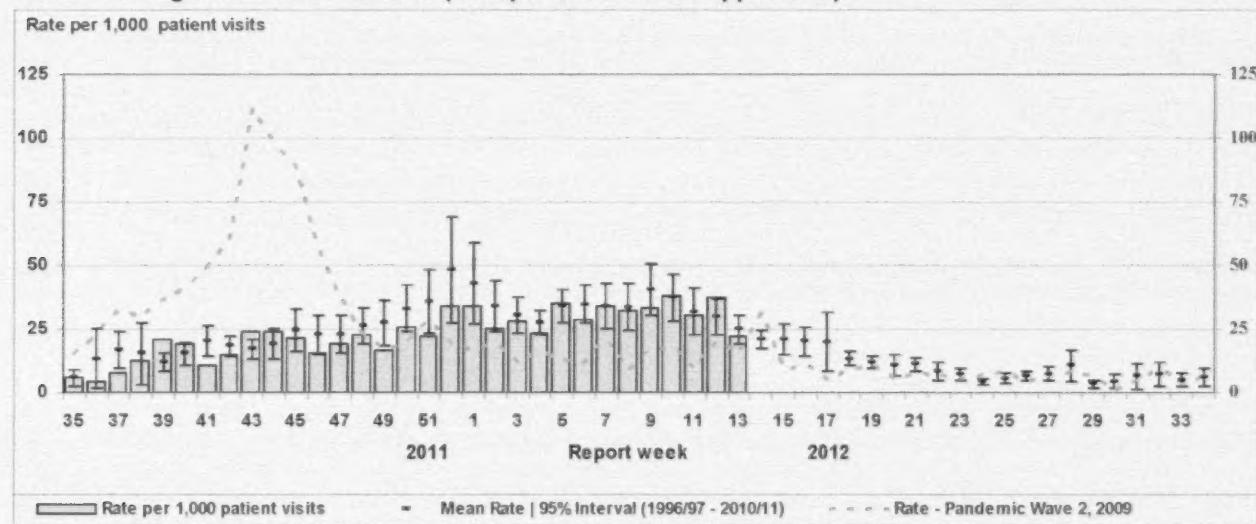
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	155	0	155	0	255	254 (99.6%)
A (H1N1)	145	0	145	0	192	192 (100%)
B	431	0	431	0	NA*	NA*
TOTAL	731	0	731	0	447	446 (99.8%)

* NA – not applicable

Influenza-like Illness (ILI) Consultation Rate

The national ILI consultation rate declined from the previous week (22.1 ILI consultations per 1,000 patient visits in week 13) and remains within the expected levels for this time of year (Figure 7). The highest consultation rates this week were observed in those 5 to 19 years old (44.9/1,000 visits) and children under 5 (32.8/1,000 visits).

Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2011-2012 compared to 1996/97 through to 2010/11 seasons (with pandemic data suppressed)



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Severe Respiratory Illness Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 13, 43 new laboratory-confirmed influenza-associated paediatric (16 years of age and under) hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. Six hospitalizations were due to influenza A (unsubtyped) (in QC & NL); 2 were due to A(H1N1) (in AB & QC); 6 were due to A(H3N2) (in AB & QC) and 29 were due to influenza B (in AB, MB, ON, QC, NS & NL).

To date this season, 421 influenza-associated paediatric hospitalizations have been reported through IMPACT (from BC, AB, SK, MB, ON, QC, NS & NL); 189 (44.9%) were due to influenza A and 232 (55.1%) were due to influenza B.

The proportion of cases by age group is as follows: 15.4% among infants <6 months of age; 20.9% among children 6-23 months of age; 30.2% were between 2-4 years; 22.8% were between 5-9 years; and 10.7% were between 10-16 years. Two influenza-associated deaths have been reported through the IMPACT network from the start of the season until week 13.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada; therefore, the number of hospitalizations included in this report may differ from those reported by other Provincial and Territorial Health Authorities.

Influenza Hospitalizations and Deaths (Aggregate Surveillance System)

In week 13, 133 new laboratory-confirmed influenza-associated hospitalizations were reported of which 50 (37.6%) were in those < 20 years of age and 83 (62.4%) in those \geq 20 years of age; 60.9% due to influenza A and 39.1% due to influenza B. The hospitalizations were reported from AB (29), MB (10), ON (85), NS (4) and NL (5). Of the 133 hospitalizations, 5 required admission to ICU (2 in AB, 2 in MB & 1 in NS). In addition, 11 adult influenza-associated deaths were reported in ON, 8 of the deaths were associated with influenza B infection.

To date this season, 946 influenza-associated hospitalizations have been reported from 7 provinces (AB, SK, MB, ON, NS, PE & NL) and 2 territories (YT & NT). The proportion of cases by age group is as follows 44.2% were <20 years of age and 55.8% were \geq 20 years of age. The proportion of cases by influenza type and subtype were similar to the previous week and are as follows: 14.9% were A(H1N1)pmd09; 20.6% were A(H3N2); 13.2% were influenza A unsubtyped; 51.1% were influenza B and 0.3% had influenza A and B co-infection.

To date there have been 38 hospitalizations requiring ICU admission reported (from AB, SK, MB, NS & NL) of which 31.6% were < 20 years of age and 68.4% were \geq 20 years of age. In addition, 49 influenza-associated deaths have been reported to date this season (from AB, SK, MB, ON & NS) of which 8.2% were among those < 20 years of age and 91.8% in those \geq 20 years of age. Of the adult deaths, 82.2% were in those \geq 65 years of age.

Note: Some of the hospitalizations and deaths reported in those \leq 16 years of age may also have been reported in the IMPACT summary above if the hospitalization or death occurred in one of the 12 IMPACT hospitals. The reason for hospitalization or cause of death does not have to be attributable to influenza in order to be reported. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces: BC, & QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not reported in ON.

International Influenza Updates

WHO: No new updates have been reported by the WHO since March 30, 2012. [World Health Organization influenza update](#)

PAHO: In week 12 in North America, influenza activity increased in Canada, declined in the United States and remained low in Mexico. Influenza A(H3N2) remained predominant in Canada and the United States while influenza A(H1N1)pdm09 remained predominant in Mexico. In Central America and the Caribbean, influenza activity remained low or within expected levels for this period of time, except in Guatemala, where influenza A(H1N1)pdm09 has increased and has been co-circulating with influenza B in the last several weeks. In South America, influenza activity and acute respiratory illness activity remained low or within expected levels for this period of time, except in Ecuador, where RSV has increased during 2012.

[Pan American Health Organization influenza situation report](#)

United States: During week 13, influenza activity remained elevated in some areas of the United States, but declined nationally and in most regions. In week 13, 20.5% (932/4,551) of influenza tests were positive of which 85.8% were for influenza A viruses and 14.2% for influenza B. Since October 1, 2011, the CDC characterized 1,046 influenza viruses: 240 A/H1N1, 654 A/H3N2 and 152 B. Of the 240 A/H1N1 viruses characterized, 238 (99.2%) were A/California/7/2009(H1N1)-like and 2 (0.8%) showed reduced titers with antiserum produced against A/California/7/2009. Of the 654 influenza A/H3N2 viruses that were characterized, 520 (79.5%) were A/Perth/16/2009-like and 134 (20.5%) showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 152 influenza B viruses that were characterized, 64 (42.1%) were B/Brisbane/60/2008-like (B/Victoria lineage) and 88 (57.9%) belonged to the B/Yamagata lineage. The proportion of outpatient visits for ILI was 1.7%, which is below the national baseline. Widespread influenza activity was reported in 10 states, 19 states reported regional influenza activity, 13 states reported localized influenza activity, while the rest reported either sporadic or no activity. One influenza-associated pediatric death was reported in week 13 (which occurred in week 9); bringing the total number of influenza-associated-pediatric deaths to date this season to 13.

[Centers for Disease Control and Prevention seasonal influenza report](#)

Europe: In week 13, influenza activity continued to decrease in most countries in the WHO European Region. The majority of countries reported decreasing trends and low to medium intensity for clinical activity. Influenza A(H3N2) viruses continue to dominate despite a slight increase in influenza B detections and a few A(H1N1)pdm09 detections. Of the 900 ILI/ARI samples tested in week 13, 319 (35.4%) tested positive for influenza, of which 71.8% were for

influenza A and 28.2% for influenza B. Since week 40, 1,149 influenza viruses have been characterized antigenically: 21 were A/California/7/2009(H1N1)-like; 948 were A/Perth/16/2009(H3N2)-like; 24 were B/Florida/4/2006-like (B/Yamagata/16/88 lineage), 26 were B/Bangladesh/3333/2007-like (B/Yamagata/16/88 lineage) and 130 were B/Brisbane/60/2008-like (B/Victoria/2/87 lineage). [EuroFlu weekly electronic bulletin](#)
Upon genetic characterization of the influenza A(H3) viruses, the European Centre for Disease Prevention and Control (ECDC) found that 64.9% fell within the A/Victoria/208/2009 clade, genetic group 3 represented by A/Stockholm/18/2011. Viruses falling within this genetic group are antigenically diverse, and therefore, there is an imperfect match with the current vaccine virus A/Perth/16/2009. This is consistent with the WHO recommendation to change the 2012-2013 northern hemisphere A(H3) vaccine component to A/Victoria/361/2011. [ECDC weekly influenza surveillance overview](#)

Human Avian Influenza Updates

Since March 24, 2012, the WHO reported three new cases of human A/H5N1 avian influenza infection from Indonesia (1) and Egypt (2). The case from Indonesia is a 17-year old male from Nusa Tenggara Barat province who developed symptoms on February 28, 2012, sought treatment on March 1 and died on March 9; investigations indicate there were sudden poultry die-offs in his neighborhood. The first case from Egypt is a 2-year old female from Demiatta Governorate who developed symptoms on March 19, 2012, was hospitalized and treated with oseltamivir the following day, and is in good medical condition; investigations indicate she had exposure to dead backyard poultry. The second case from Egypt was a 15-year old female from Giza Governorate who developed symptoms on March 25, 2012, was hospitalized in critical condition on March 29, and died on March 31; investigations into the source of infection are ongoing. [WHO Avian influenza situation updates](#)

FluWatch reports include data and information from the following sources: laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2011-2012 season

ILI in the general population: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Definitions of ILI/Influenza outbreaks for the 2011-2012 season

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. workplace, closed communities.

Influenza Activity Levels Definition for the 2011-2012 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and

(2) lab confirmed influenza detection(s) together with

(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in less than 50% of the influenza surveillance region†

4 = Widespread: (1) evidence of increased ILI* and

(2) lab confirmed influenza detection(s) together with

(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in greater than or equal to 50% of the influenza surveillance region†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: <http://www.phac-aspc.gc.ca/fluwatch/index.html>. Ce rapport est disponible dans les deux langues officielles. Pour en recevoir un exemplaire dans l'autre langue chaque semaine, veuillez communiquer avec Estelle Arseneault, Division de l'immunisation et des infections respiratoires au (613) 998-8862.